



Guide to Arizona Agriculture





December 2016



The agriculture industry in Arizona is strong and growing stronger. Agriculture owns three of Arizona’s “Five Cs” – cattle, cotton and citrus – and continues to serve an important role in our economy and our communities.

There is so much to be proud of as a state when it comes to Agriculture. We’re a top producer of the nation’s fruits and vegetables, and continue to be the winter lettuce capital of the world. Arizona’s 97 wineries are thriving too, with 300,000 gallons of wine produced last year. Our agricultural community accomplishes all of this while continuing to be recognized as a world-class leader in water management.

We take pride in our farmers and ranchers, and we’re always working to make sure our government is making life easier for them. From streamlining the branding process for ranchers to expanding access to the Mariposa port of entry, a major facilitator of produce moving between the United States and Mexico.

So, whether you’re looking to learn more about our state’s agriculture industry, find out the many ways you can benefit, or even relocate your business here, the *Guide to Arizona Agriculture* is for you.

Enjoy,

Douglas A. Ducey
Governor, State of Arizona



December 2016



Arizona agriculture is the best in the world. We provide high quality Durum wheat to Italian pasta makers, because it is the best. We provide almost all leafy greens to North America from November to February. We have amazing producers who work closely together and with us.

The Arizona Department of Agriculture is promoting public policy to help Arizona agriculture be successful. If you're looking to move to our state or start a new agriculture business, we can help.

President Dwight D. Eisenhower may have said it best, *"The proper role of government, however, is that of partner with the farmer – never his master. By every possible means we must develop and promote that partnership – to the end that agriculture may continue to be a sound, enduring foundation for our economy and that farm living may be a profitable and satisfying experience."*

This Guide provides an introduction into Arizona Agriculture. There is more to learn and more to see. Contact our Department or our partners to learn about what we do, and how we can help you join the Arizona Agriculture family.

Sincerely,

Mark W. Killian

Mark W. Killian
Director, Arizona Department of Agriculture



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Open for Business

The Grand Canyon State boasts natural beauty and wonderful weather. It also provides an excellent climate for business. Located in the Southwest, Arizona has access to international and interstate markets, many within a day's drive. The competitive tax structure and available workforce add to the benefits for Arizona business.

The well-planned infrastructure provides quick access for products to quickly go to market, as well as for supplies to come into the state.

Arizona offers more than 66,000 miles of highways, over 40 public transit systems, two Class I railroads and more than 80 airports. Companies have access to 65 million consumers through the transportation system. The state's location gives proximity to some of the world's largest economies – Texas, Mexico, California and shipping ports on the West Coast.

Arizona will have one of the lowest corporate tax structures in place in 2017 at the rate of 4.9%.

Businesses find tax credit programs for manufacturing, research and development, renewable energy and the creation of quality jobs. Quality jobs are defined by the areas in which the business locates, based on average wages and health insurance.

The state's workforce tops 3 million and has a relatively young median age of 37. It is a Right to Work state and has some of the lowest labor costs in the country.

Whether a business decides to start, expand or relocate, Arizona is Open for Business.



Water in the Desert

There are four deserts in the Grand Canyon State leading many people to believe there is no water in the state. Truthfully, Arizona acknowledged the water situation decades ago and planned for and protected its water.

The state is blessed with a network of rivers and streams including the Colorado, Verde, Salt, Gila, San Pedro, Santa Cruz and Little Colorado Rivers. There are also many tributaries that contribute to those rivers. Each watershed connects communities that are dependent on their flows for sustaining life and agriculture.

The past provides a foundation and information to efficiently use and conserve water. The Hohokam and other indigenous people used canals to divert water for crops and sustain communities. Modern water leaders work to share the water among various users: agricultural, municipal, industrial, tribal and environmental users.

Leaders at all levels of government and the private sector have taken action for the sustainable use of Arizona's water supply. Other efforts provide storage capabilities above and below ground in an effort to save for future needs.

Agriculture uses water the same way it uses the land. Modern technology helps farmers and ranchers use what they need and no more. Water not used in the fields returns to the rivers and storage. Most importantly the water used by agriculture is not wasted; it provides food and fiber to the people of Arizona, the United States and dozens of other countries.



Arizona Agriculture

Long before Arizona was a state, and before there was a United States, agriculture thrived in Arizona. Agriculture's history in the Grand Canyon State stretches back more than 4,000 years. Archeologic records show Indigenous people growing gardens to sustain their families.

When explorers traveled through the state in the early 19th century, they found people growing corn, wheat, barley and raising cattle. They also found one of the most amazing irrigation systems, one that is still used today. The Hohokam people built the canals to move water from the Gila and Salt Rivers to their fields. The canals were engineered to move the water at the correct speed to maintain the flow, but not clog the canals with silt and debris.

Since then, farmers and ranchers have found the diversity of Arizona's climate and soil supports hundreds of edible plants, beautiful landscaping plants, poultry, swine and cattle for dairy and meat. Arizona agriculture exports vegetables, fruit, nuts, seeds, wheat, hay, cotton, eggs, beef and milk to 70 countries and across the U.S.

Today, agriculture in Arizona contributes more than \$17 billion to the state's economy. One study puts the number of people involved in agriculture at 77,000, but it is impossible to count the number of professions.

Some of the many people that make agriculture work in Arizona include field workers, harvest crews, distributors, farmers, ranchers, fertilizer and pesticide suppliers, scientists, engineers, fuel companies and equipment dealers.

Arizona's climate provides year-round growing for hundreds of types of crops. Besides crops such as cotton, alfalfa and wheat, Arizona farmers raise specialty crops. The specialty crop sector includes thousands of varieties from nursery plants to the fresh vegetables eaten every day. Leafy greens, cabbage, melons, lemons, oranges, apples, potatoes and tomatoes are just some foods harvested from Arizona's nourishing soil.

The state also boasts a growing nut crop industry. Pistachio trees have a small presence in the Grand Canyon State, but the pecan business is developing quickly. The state has the largest pecan grove in the country. Growers and investors have planted thousands more acres that have not started producing yet.

The animal industry, led by cattle ranching, dairy and dairy production, is the largest agricultural sector. The egg industry is growing as companies see the excellent economic opportunities. There are facilities licensed for growing fish and shrimp, which may seem like an unexpected industry in the state.



Indigenous Farmers

Indigenous farmers predate Arizona statehood by several years, with some areas going back centuries. The [Changing Faces in Arizona's Food System](#) says,

“The intentional production of corn, squashes, beans and other annual crops has been practiced for at least 4,100 years in the landscapes that are now part of Arizona. Prehistorically, families from at least 14 indigenous cultures successfully farmed with river or spring irrigation, or with harvested rainwater.”

The United States Department of Agriculture's National Agriculture Statistic Services census from 2012 paints a picture of Indigenous farming and ranching.

Indigenous farmers operate on 11,190 farms with almost \$67 million in sales of agricultural product. These farms represent 56 percent of the number of farms in Arizona. Seventy-five percent of those farms are between one and nine acres. The largest use of the land is for animals: beef cattle, goats, sheep, fish and other animal products. The average age of the indigenous farmer is 61.5, virtually the same as other farmers and ranchers in the state.

Unlike the rest of the country, women made up the larger number of indigenous farmers in 2012.





Arizona Farm Bureau



Organized agriculture thrived in the area now known as Arizona hundreds of years before it was settled by current residents. Shortly after statehood in 1912, citrus joined cotton as a major commodity in the state. In 1922 the state’s first dairy, Shamrock, opened in Tucson solidifying agriculture as a major economic player in Arizona. The different industries joined together to ensure strong representation in economic decisions and legislation.

Through the next 90 years, Arizona agriculture grew as more producers recognized that the fertile soil and substantial sunshine allowed for year-round growing of exceptional quality crops.

Today, Arizona ranks tenth in organic sales, third in lemon production, and during winter months, first for lettuce and other leafy greens. Arizona agriculture and agribusiness have a \$17.1 billion impact on the state’s economy and support 77,000 jobs.



325 S. Higley Road, #210
Gilbert, AZ 85296
480-635-3605
azfb.org

› ***The Arizona Farm Bureau was organized in 1921 to represent all agriculture: small, medium and large animal, and organic, conventional and biotech farmers and ranchers.***

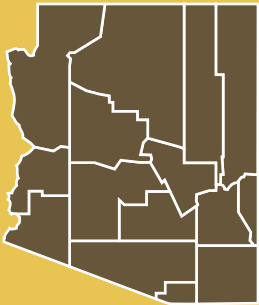
› ***As the largest farm and ranch organization in Arizona, Arizona Farm Bureau projects the Voice of Agriculture in the state.***

ARIZONA FARMS
AND RANCHES

26 Million
acres

54%
sell less than
\$1,000

40%
of farmers
are women



COUNTIES
Includes all counties

ECONOMIC IMPACT

\$1.7 Billion
total contribution
to state output

\$521 Million
export value

43%
exports outside of Arizona

Year-round
production



COUNTIES

Includes all counties

Arizona Beef Council



1401 N. 24th Street, Suite 4
Phoenix, AZ 85008
602-273-7163
arizonabeef.org

More than 20% of Arizona's 19,500 farms specialize in beef production. Together, farming and ranching families manage more than 26 million acres of Arizona land.

Besides caring for animals and tending crops, ranchers and farmers are stewards of the land and work to continuously improve the techniques they use to raise beef. Data shows ranching is more sustainable than it was 30 years ago. Compared with beef production in 1977, each pound of beef raised today produces 16% less carbon

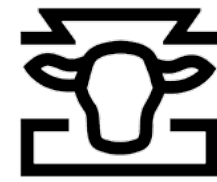
emissions, takes 33% less land and requires 12% less water. Arizona ranchers' priorities are to care for their animals, care for the land and care about providing high quality beef.

The industry is more than cow-calf ranches and feedlot operations. The beef industry includes cattle processing, finishing, leather and hide tanning.

› ***The Arizona Beef Council, created in August, 1970, helps develop and maintain state, national, and foreign markets for beef and beef products.***

› ***The Beef Checkoff Program funds education, research and promotion of beef in Arizona.***

Arizona Cattle Growers' Association



1401 N. 24th Street, Suite 4
Phoenix, AZ 85008
602-267-1129
azcattlemensassoc.org

Cattle and other livestock moved into Arizona over 300 years ago after conquistadors discovered the area. Around 1690 Spanish Missionaries introduced ranching to the Tohono O'odham Indians.

After the Civil War, overgrazed pastures in Texas led ranchers to the Arizona Territory and began the state's cattle boom. Around the same time miners discovered gold near Prescott, ranchers were moving stock onto Arizona's grasslands. Railroads and windmill technology, used to fill ponds, brought an

explosion of ranches and cattle speculators from the East Coast. By the 1890s, about 1.5 million cattle roamed in Arizona.

Since the boom of the 19th century, cattle numbers have leveled out to a responsible number for the rangelands. In addition to raising one of the nation's most popular foods, ranchers take great pride in protecting the environment for livestock, wildlife and the public to enjoy. Today most cattlemen are third and fourth generation ranchers.

› ***The Arizona Cattle Growers' Association was organized in 1904 to help create orderly, systematic laws to protect livestock and property.***

› ***The Association is the only organization that exclusively represents Arizona's beef producing families.***

CATTLE INDUSTRY

8 Million
people could have been fed
by Arizona ranchers in 2015

1.4 Billion
beef meals were raised by
Arizona ranchers in 2015

Year-round
production



COUNTIES

Includes all counties

ARIZONA'S DAIRY
INDUSTRY REPORTED

100

dairy farms

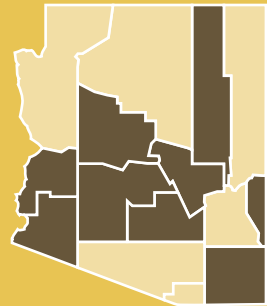
210,000

cows

98%

family-owned
and operated

Year-round industry



COUNTIES

Cochise, Gila, Greenlee,
La Paz, Maricopa, Navajo,
Pinal, Yavapai and Yuma

Dairy Associations



2008 S. Hardy Drive
Tempe, AZ 85282-1211
480-966-7211
uda.coop



510 S. 52nd Street
Tempe, AZ 85281
480-656-7163
arizonamilk.org

› ***The United Dairy Association (UDA) is one of the strongest producer-owned cooperatives in the country.***

› ***UDA is the sixth largest private employer in the state.***

› ***The Arizona Milk Producers and Dairy Council of Arizona, funded by a checkoff program, promotes dairy and nutrition education.***

The dairy industry blossomed in Arizona with the introduction of irrigation and alfalfa. By 1957, dairy was a \$25 million business with 372 dairy farms and an average herd size of 88 cows. It was one of the largest and most financially stable industries in the state.

In the next 50 years, the number of farms dropped to 100, but the number of cows per herd increased to about 1,400. The population of 173,000 cows averaged yearly milk production of 22,855 pounds per cow.

Today, because of innovative and intensive herd management, there are 210,000 cows with about 2,000 cows per herd, each producing an average of 23,750 pounds of milk per year. Arizona's herd size is the second largest in the country. The average size of a dairy herd is 187 cows in the United States.

Cows are fed extremely precise diets to keep them healthy and producing milk. Arizona dairies are specially designed for our hot summers, with special barns called "Saudi Barns." These barns are equipped with fans and misters. The cooling systems work so well it can be up to 30 degrees cooler in the shade of the barn.

Egg Producers



The commercial egg industry started in Arizona the same way many small businesses begin – in someone's home. In this case it was in Nell Hickman's backyard in 1944. Egg production soon outgrew the backyard coops, growing from 50 hens to 500. Hickman's Family Farms has about 10 million hens in several sites in Arizona. Beginning in 2017, another family-owned company, Rose Acre Farms, will produce eggs in La Paz County. As the second largest egg producer in the U.S., the Rust family began the company from its home in the 1930s.

Arizona's superior weather, economic climate and the lack of a major flyway for wild birds are key considerations for poultry operations. Flyways are regular routes taken by wild birds during migration. Wild birds are a common source of avian influenza which can wipe out entire flocks of chickens, turkeys and other commercial birds.

Today's egg facilities are economical, efficient and environmentally friendly. Operations utilize conveyor belts and robots to speed the packing process and reduce human contact with the eggs.



6515 S. Jackrabbit Trail
Buckeye, AZ 85326
623-872-1120
hickmanseggs.com



Post Office Box 1250
Seymour, IN 47274
812-497-2557
goodegg.com

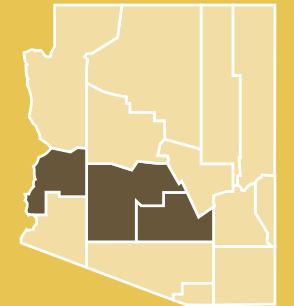
› ***An egg can go from farm to table in less than 24 hours.***

› ***Hickman's Family Farms and Rose Acre Farms are family owned and operated.***

EGG INDUSTRY

Part of
\$17.1 Billion
agricultural impact
on the
state's economy

Year-round
production



COUNTIES

Maricopa, Pinal
and La Paz



Arizona Leafy Greens



Food Safety Committee
 1688 W. Adams
 Phoenix, AZ 85007
 602-542-0945
 azleafygreens.org

Leafy greens have a special place in Arizona agriculture. The state ranks second in production of lettuce and spinach in the country. The production of leafy greens carries a large responsibility for public health. For the most part, leafy greens are eaten raw. Growing, harvesting and shipping this produce must all be done with Good Agricultural Practices/ Good Handling Practices to protect against foodborne illness.

Arizona’s producers created an innovative food safety program in 2007. The voluntary plan assures buyers that the leafy greens grown with this program are produced

using strict protocols for food safety. The comprehensive program sets a high standard that other commodities across the country have followed.

Certification from the Leafy Green Marketing Agreement covers the 15 leafy greens grown in Arizona: iceberg, romaine, baby leaf, spring mix, green, red and butter leaf lettuces, spinach, cabbage, kale, arugula, chard, endive, escarole and radicchio. To receive certification, shippers must make sure that those who grow and harvest their product have complete food safety compliance plans and written trace-back programs.

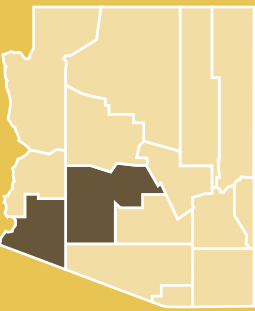
A new federal Food Safety Modernization Act will mandate many of the safety measures that Arizona’s leafy greens industry already has in place.

- › ***Started in 2007, the Arizona Leafy Greens program is a model for other states.***
- › ***Arizona Leafy Greens’ Food Safety Training Kit received industry recognition in 2012 and 2014.***

NOVEMBER-MARCH
 GROWING SEASON

71 Million
 cartons of lettuce

25 Million
 cartons of Iceberg lettuce
 (most popular)



COUNTIES
 Yuma and Maricopa

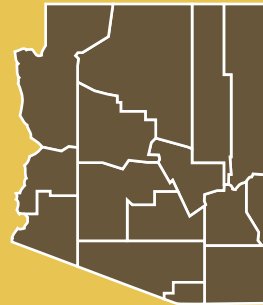
U.S. FARMS

80%
of food eaten
in the country
comes from
U.S. farms

ARIZONA FARMS

Year-round
growing season

Most fields return
to production
days after harvest



COUNTIES

Includes all counties

Western Growers



Western Growers is a trade association of California, Arizona and Colorado farmers who grow, pack and ship almost 50% of our nation's produce.

Its mission is to enhance the competitiveness and profitability of its members. The organization accomplishes this by providing products and services with agriculture in mind, including compliant health benefits for farm workers, cost-saving and environmentally-focused logistics, food safety initiatives and advocacy.

Arizona's diverse weather and soil conditions, along with well-managed water resources, allow for year-round growing across more than 130,000 acres. Western Growers' members produce lettuce, spinach, cabbage, melons and many other crops in Arizona, the perfect location for producing specialty crops. Many agricultural companies are moving to Arizona because of the productivity and the growing environment.

Arizona cash receipts for crops in 2015 totaled \$2.35 billion with vegetables and melons accounting for a little more than 40% of crop cash receipts.

› **Western Growers was founded in 1926 to enhance the competitiveness and profitability of members.**

› **The group helps members with health care, labor, international trade and transportation.**

Yuma Fresh Vegetable Association

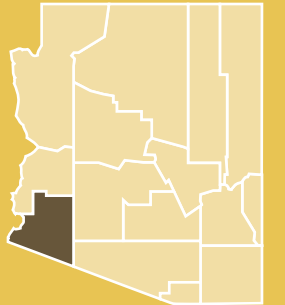


AGRICULTURE
IN YUMA COUNTY

1 in 5
jobs tied to agriculture

\$2.8 Billion
for Yuma County economy

Year-round
growing season



COUNTIES

Yuma

The soil in Arizona's southwest corner is naturally full of essential nutrients from the Colorado and Lower Gila Rivers. The fertile, alluvial soil and bountiful sunshine feed crops year-round. The area may be best known for its lettuce, as "America's Winter Lettuce Capital," but Yuma County grows more than 40 kinds of vegetables and melons on more than 90,000 acres of land every year.

It hasn't always been that way. In the 1970s, Yuma farmers focused on citrus, alfalfa, cotton and sorghum. At the time only 10 percent of the nutritious soil was used in multi-crop production. The amount of water allocated to Yuma County

dropped about the same time, going up in the 1980s and dropping again. The changes in water availability prompted dramatic changes in agriculture practices. One of those was to rotate fruits and vegetable with field crops.

Historically the specialty crops such as lettuce, melons and broccoli require more labor than grain and cotton. Planting and harvesting often require hands-on work, but there are thousands of workers who come across the border to help. Technology is rapidly changing the planting and harvesting processes, reducing the need for labor.

› **The Yuma Fresh Vegetable Association is dedicated to protecting and promoting the needs of Yuma vegetable and melon production.**

› **The association became a non-profit in 1947.**

› **The Yuma Fresh Vegetable Association holds the Southwest Ag Summit in February.**

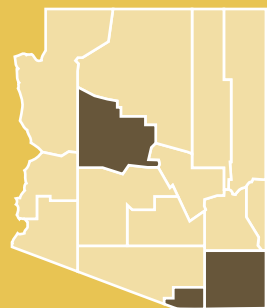
IN 2015, ARIZONA'S
WINE INDUSTRY

1,250
acres

300,000
gallons produced

\$25 Million
estimated worth

Year-round
wine availability



COUNTIES

Yavapai, Santa Cruz
and Cochise

Arizona Wine Growers Association



10277 E. Rock Creek Lane
Pearce, AZ 85625
520-261-4421
arizonawine.org

Arizona wine traces its roots to the 16th century. Spanish Jesuit priests planted grapevines and made wine for sacramental use in their missions.

Historical accounts show that just before the beginning of the 20th century, two farmers started wine grape vineyards near Sedona and Douglas. A study completed in 1980 launched the modern wine industry in Arizona. The feasibility study showed the viability of grapes in certain areas of the state depending on climate and soil. There are several areas around the state that are suitable for growing grapes: Willcox Basin, San Simon Basin, and areas near Kingman, Sonoita and the Verde Valley.

Grapes thrive above 3,500 feet, a region which isn't suitable for many crops. Grapes also use little water which makes them ideal for a state that cherishes every drop. Armed with that information, the wine industry in Arizona began to grow – slowly at first.

Sonoita Vineyards was the first, licensed shortly after the state passed a Farm Winery Law in 1982. By the time the state updated the law in 2006, there were 9 licensed wineries. The next 10 years brought exponential growth for the industry. In 2015, 97 licensed wineries produced 300,000 gallons of wine.

› **Arizona Wine Growers Association, founded in 1983, represents wine growers and licensed wine producers.**

› **The association works to market, promote, advocate and educate about Arizona's wine industry.**

Arizona Pecan Growers Association



Post Office Box 7
Sahuarita, AZ 85629
520-403-4613

Arizona can brag about its pecan industry. The Grand Canyon State has the largest pecan farm in the world with 8,000 acres of trees. Keith Walden, Farmers Investment Company, ventured into the pecan business in the early 1960s when he planted the trees on part of his cotton farm in Green Valley/ Sahuarita, south of Tucson. The trees produced well in Arizona's soil and sunshine, and he planted more. Pecan trees now cover 5,000 acres on that farm, and he has another farm with 3,000 trees in San Simon.

Farmers Investment Company has the only pecan shelling company in Arizona. Besides Walden's pecans, it buys nuts from growers in Arizona, New Mexico and Mexico. The pecans are marketed under the Green Valley Pecan brand.

Walden isn't the only grower anymore. There are about 15,000 acres of mature pecan trees in the state. Since the trees flourish in Arizona's climate, more farmers are moving into the state. Growers have planted 7,000 to 8,000 acres of new pecans in Southern Arizona.

› **The Arizona Pecan Growers Association started in 1989.**

› **The association's mission is to promote and improve the advancement of the pecan industry in the state of Arizona.**

2016 ESTIMATES

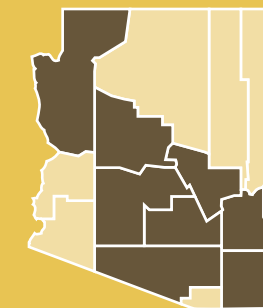
22 Million
pounds of production

\$55 Million
gross revenue

PECAN TREES

7-8 Years
to produce after planting

Larger harvests
every other year



COUNTIES

Cochise, Gila, Graham,
Greenlee, Maricopa, Mohave,
Pima, Pinal and Yavapai

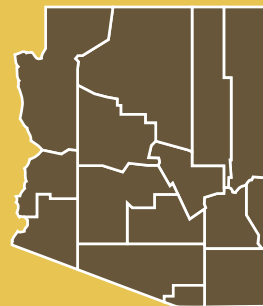
NURSERY AND
LANDSCAPE INDUSTRY

\$1.6 Billion
sales

\$710 Million
payroll

30,000
jobs

Year-round
growing season



COUNTIES

Includes all counties

Arizona Nursery Association



Nurseries started in the Grand Canyon State when Arizonans demanded beautiful, low-water plants that California nurseries couldn't supply. Arizona's nursery industry covers retail and wholesale plant and tree growers. Professionals in the nursery industry are called horticulturalists; they understand and teach their customers about landscape design, choosing plants, caring for them and detecting disease, among other skills.

During the last 40 years, the state's nurseries have changed and diversified the plants they offer

based on what the public wants. Horticulturalists develop and raise new beautiful plants that need less water and are suited for the state's unique climate.

Arizona's rose industry does more than develop varieties suited for Arizona. Many new varieties are sent throughout the U.S. and exported. Most of the roses bought across the country at nurseries, hardware stores and superstores have their roots in Arizona soil.

› ***The Arizona Nursery Association represents the retail and wholesale plant and tree growers in the state of Arizona.***

› ***Formed in 1959, the association provides communication, education and promotion services for members.***

Arizona Cotton Growers Association



Arizona Cotton
Growers Association

9885 S. Priest Drive, Suite 102
Tempe, AZ 85284
602-437-1344
azcottongrowers.com

Cotton has a long history in Arizona, but the greatest evolution came in the late 19th century. When the popularity of Egyptian cotton grew, Arizona farmers worked to grow an American hybrid. The longer fibers found in the hybrid cotton are stronger than the short staple cotton. This cotton, later called Pima cotton, was valued for its strength. The cloth made from it is soft and silky.

During World War I, the stronger cotton grown in Arizona was used in tires and airplane wings. The Goodyear Tire and Rubber company bought land and grew the Pima cotton in the Salt River Valley. Other tire makers followed suit.

The Goodyear company also brought an aircraft corporation to the area. The town of Goodyear is named for the company.

Almost all the plant is used when it is processed. The seed, stalk and even the lint have a use in our society. Seed is sold for future planting. Cottonseed oil is used for cooking (cholesterol-free) and in a variety of industrial products (soap, margarine, cosmetics and pharmaceuticals to name a few). The stalks can be processed into mulch. The lint is used for bandages and cotton swabs.

Arizona's generous sunshine and fertile soil grow some of the best cotton in the world.

› ***The Arizona Cotton Growers Association, started in May, 1942, represents all cotton growers in the state.***

› ***The mission is to protect and improve the economic viability of the Arizona cotton producer.***

1 BALE OF COTTON =

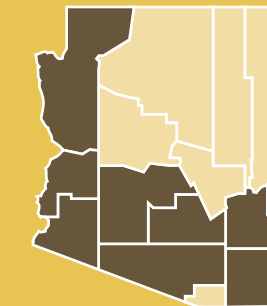
215
pairs of jeans

1,200
t-shirts

ECONOMIC IMPACT

\$400-500 Million
per year

3,000
jobs



COUNTIES

Cochise, Graham, Greenlee,
La Paz, Maricopa, Mohave,
Pima, Pinal and Yuma

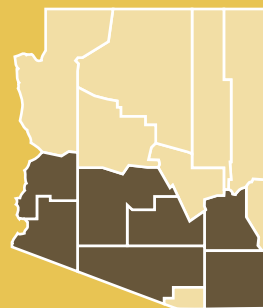
BARLEY AND WHEAT

**\$200-350
Million**

annual economic impact

100

bushels per acre each
(average yield in Arizona)



COUNTIES

Cochise, Graham, La Paz,
Maricopa, Pima, Pinal
and Yuma

Arizona Grain Research & Promotion Council



1688 W. Adams
Phoenix, AZ 85007
602-542-3262

For more than a century, farmers have grown wheat and barley in Arizona. Together they make up 10-45 percent of the state's annual crop acreage, depending on market demands. Rotating wheat and barley helps condition the soil for growing other crops. Barley is grown exclusively for feeding livestock in Arizona.

Wheat provides grain for livestock feeding, flour milling and the craft food and beverage industries. Common varieties of wheat were grown for feed and milling before the 1960s. Durum varieties with excellent milling and pasta-making traits came on the scene in the late 1980s and are known globally as

Desert Durum®. Italian pasta makers first recognized the qualities of Desert Durum® for making world-class pasta.

Private grain-breeding programs in Arizona now develop and market barley and durum varieties that meet farmer needs. Modern durum varieties meet miller needs and traits desired by pasta-makers. Arizona growers plant certified seed of specific varieties preferred by domestic and foreign customers. The resulting low-moisture grain crops are harvested, stored and shipped on an "identity preserved" basis to domestic and foreign customers.

› ***The Arizona Grain Research and Promotion Council (AGRPC), formed in 1986, uses checkoff funds for research and improve profitability for growers.***

› ***Desert Durum® is a service and certification mark owned by AGRPC and the California Wheat Commission.***





Education

Universities and colleges work closely with the agriculture industry in Arizona to enhance quality and efficiency. Creation of knowledge through research at universities is of the utmost importance for the advancement of the Arizona agricultural economy.

The state's three public universities, Arizona State University (ASU), Northern Arizona University (NAU), and the University of Arizona (UA) have programs that interact with the industry. Midwestern University, a not-for-profit private school, has a College of Veterinary Medicine. Arizona Western and Yavapai Colleges offer degrees and coursework in agriculture technology.

Established in 1891, the state's land grant university, UA, is located in Tucson. Its College of Agriculture and Life Sciences provides a comprehensive program in all aspects of the commerce of agriculture. Degrees in all of the traditional agricultural disciplines as well as

biomedical sciences, engineering, economics, education, and family and consumer sciences, including a top-ranking retail science program are offered. The UA is committed to developing a public School of Veterinary Medicine particularly to address the need for rural veterinarians, to support our important food animal industries and public health. The UA also maintains Arizona's Cooperative Extension System and statewide network of Experiment Station units. cals.arizona.edu

NAU in Flagstaff features earth sciences and environmental sustainability degree programs related to protecting natural resources through agricultural and land-use management practices. nau.edu/cefns/natsci/seses

ASU offers robust programs and research in the areas of sustainability, biological sciences and agriculture. Key programs include the W. P. Carey School of Business Morrison School of Agribusiness, which focuses on the

business side of agriculture and the School of Nutrition and Health Promotion, which works with various agriculture industry groups to promote Arizona grown products. asu.edu

Arizona Western College in Yuma works closely with the agriculture industry to offer up-to-date hands-on learning in production agriculture. It offers agricultural degree and certificate programs in crop production, food safety, animal production and agribusiness. azwestern.edu

Yavapai College, with six locations in Yavapai County, offers programs that teach how to start, manage and market agriculture businesses. It also hosts an academic center to support the wine industry. Classes and hands-on training provide opportunities for current and future viticulture and enology professionals. yc.edu



Cooperative Extension

Working with the federal government and all 15 counties, the UA Cooperative Extension provides a statewide non-formal education network. Its mission is to engage with people through applied research and education to improve lives, families, communities, environment and economies in Arizona and beyond.

Cooperative Extension works with residents and professionals alike. Experts answer household, garden and nutrition questions for the general public and work with agriculture professionals regarding:

- *Crop production systems emphasizing agronomic, economic and environmental efficiency*
- *Range and livestock systems emphasizing efficient management of animal and natural resources economically and environmentally*
- *Water resource management*
- *Urban agriculture and gardening*

UA's College of Agriculture & Life Sciences Cooperative Extension Agricultural Literacy Program works with K-12 classroom teachers to provide a solid foundation for students to understand the source and value of agriculture and how it affects our quality of life. The Ag Literacy Program provides classroom lessons, curriculum and materials for K-12 teachers, hosts a Summer Agricultural Institute, provides school garden food safety information and much more.

An agriculturally literate person understands and can communicate the source and value of agriculture as it affects quality of life.

For agricultural businesses operating in or moving to Arizona, for young adults looking to move into one of the country's most important industries or residents wanting to learn how to grow a garden, Arizona's education institutions have answers.



Youth

Arizona youth have a variety of ways to begin learning about agriculture. The Arizona Farm Bureau and the UA Cooperative Extension offer Ag in the Classroom/ Ag Literacy programs and lessons for K-12 classroom teachers as well as direct delivery of educational programs to students in kindergarten through seniors in high school. The Arizona Agriculture Teachers Association instills a passion in students for agriculture and learning.

UA's College of Agriculture & Life Sciences Cooperative Extension 4-H Agents guide 4-H programs around the state working with individual communities and youth. Proven to create leaders and active adults, more than 130,000 4-H students learn practical skills for success. With the best STEM (Science, Technology, Education and Math) afterschool program in the state, it's no wonder Arizona 4-H is a leader in the country.

4-H youth grow up to be leaders who give back to the community.

The FFA opportunity for students starts with secondary education. Expanding on leadership, communication and emotional, social and professional growth provides a sound foundation for teens to achieve success. FFA opportunities continue through college, preparing young adults opportunities to pursue agriculture, business, engineering, education and many other professions.

Of course, the basis for all education of young people begins with good teachers. Learning often begins at home from generations of agriculture experience. Sometimes, it doesn't start until a child finds the right teacher in school. No matter when it starts, the love of agriculture instilled at a young age fosters a love for the land, respect for animals and appreciation of a hard day's work.



Food Safety

The U.S. has one of the safest food supplies in the world and that's because agriculture prioritizes food safety. Working with the Department of Agriculture, USDA and FDA, Arizona producers protect the food supply starting at the farm.

The Arizona Leafy Greens Food Safety Program leads the way in produce safety, setting a standard for other states and national food standards. The monitoring of soil, water, environment and worker sanitation protects against germs.

The sanitation of milk and dairy products begins on the farm and continues through production. Dairy farms must meet cleanliness standards before milk is collected. Transportation to the processing plant has additional sanitation and safety standards. Once at the dairy plant, milk is protected throughout processing and bottling; it is tested several times before it goes to the store.

Egg production is monitored from the chicken houses through packaging and into the retail stores for safety and sanitation. Chicken coops, processing, packaging and distribution have standards for pest control, biosecurity, safe handling, temperatures and other key safety elements. The USDA stamp on egg cartons is for quality and size.

The Department of Agriculture ensures public health by monitoring food from the farm and barn to the customer.

Cattle health begins on ranches, watching for disease and continues at processing plants, where inspectors make sure the cattle are healthy. Staff thoroughly reviews food safety, plans and records. Inspectors monitor the cleanliness of the facility before, during and after processing, temperatures, testing records and workers' health.



Arizona Harvest Schedule

Arizona produces food for a well-balanced diet all year long – from the high country, to the desert, to the lush river valleys. There is always something – fruits, vegetables, dates or nuts – being harvested from January to December. Follow the harvesting calendar to see what is available every month of the year.

FRUIT OR HERB

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
ANISE	•	•	•									•
APPLE, AMBROSIA									•			
APPLE, FUJI									•	•		
APPLE, GALA								•	•			
APPLE, GOLDEN DELICIOUS								•	•	•		
APPLE, GRANNY SMITH									•	•	•	
APPLE, PINK LADY										•	•	•
APPLE, RED DELICIOUS								•	•	•		
APPLE, SUNDOWNER										•	•	•
APRICOTS					•	•						
CHERRIES						•						
CILANTRO	•	•	•	•							•	•
DATES									•	•		
DILL	•	•	•								•	•
FIGS					•	•						
GRAPEFRUIT, RED BLUSH	•	•	•	•	•	•	•	•	•	•	•	•
GRAPEFRUIT, WHITE	•	•	•	•	•	•	•	•	•	•	•	•
GRAPES, CONCORD									•			
GRAPES, VARIOUS WINE					•	•	•	•	•			
LEMONS	•	•	•					•	•	•	•	•
MELONS, CANARY	•	•	•	•	•	•	•	•	•	•	•	•
MELONS, CANTALOUPE					•	•	•	•	•	•	•	
MELONS, CASABA						•	•	•	•	•	•	
MELONS, CRENSHAW						•	•	•	•	•	•	
MELONS, HONEYDEW						•	•	•	•	•	•	
MELONS, ORANGE FLESH						•	•	•	•			
MELONS, SANTA CLAUS						•	•	•	•			
MELONS, SHARLYN						•	•	•	•			
MELONS, SPECIALTY						•	•	•	•			
MELONS, WATERMELON					•	•	•	•	•	•	•	
ORANGES, BLOOD	•	•										•
ORANGES, MANDARIN	•	•	•									
ORANGES, NAVEL	•	•									•	•
ORANGES, SWEET	•	•	•								•	•
ORANGES, TEMPLE	•	•										•
ORANGES, VALENCIA		•	•	•	•	•						
PARSLEY	•	•	•	•						•	•	•
PEACHES					•	•		•				
PEARS								•				
PLUMS						•	•	•				
TANGERINES, FAIRCHILD											•	•
TANGELOS, MINNEOLA	•	•									•	•
TANGELOS, ORLANDO	•	•									•	•

• WINTER PRODUCE • SUMMER PRODUCE

VEGETABLE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
ARTICHOKES		•	•	•	•							
ARUGULA	•	•	•	•	•						•	•
ASPARAGUS		•	•	•	•							
BEAN, FAVA		•	•	•								
BEAN, GREEN					•	•			•			
BEAN, PINTO							•	•	•	•		
BEAN SPROUTS	•	•	•	•	•	•	•	•	•	•	•	•
BEETS	•	•	•								•	•
BOK CHOY	•	•	•								•	•
BROCCOLI	•	•	•							•	•	•
BROCCOLI, BABY	•	•	•								•	•
BRUSSEL SPROUTS	•	•	•									•
CABBAGE, GREEN	•	•	•	•	•	•	•	•	•	•	•	•
CABBAGE, RED	•	•	•	•	•						•	•
CARROTS	•	•	•	•	•	•	•	•	•	•	•	•
CAULIFLOWER	•	•	•	•							•	•
CAULIFLOWER, GREEN	•	•	•								•	•
CELERY	•	•	•								•	•
CORN, SWEET					•	•	•	•	•	•	•	
CUCUMBER	•	•	•	•	•	•	•	•	•	•	•	•
DAIKON (JAPANESE RADISH)	•	•	•									
DANDELION	•	•	•	•							•	•
FRISÉE	•	•	•	•							•	•
GREENS, BEET	•	•	•	•							•	•
GREENS, COLLARD	•	•	•	•							•	•
GREENS, MUSTARD	•	•	•	•							•	•
GREENS, TURNIP	•	•	•	•							•	•
KALE	•	•	•	•							•	•
KOHLRABI	•	•	•									•
LEEKs	•	•	•								•	•
LETTUCE, BUTTER/BOSTON	•	•	•								•	•
LETTUCE, ENDIVE	•	•	•								•	•
LETTUCE, ESCAROLE	•	•	•								•	•
LETTUCE, ICEBERG	•	•	•								•	•
LETTUCE, LEAF	•	•	•								•	•
LETTUCE, ROMAINE	•	•	•								•	•
LETTUCE, SPRING MIX	•	•	•	•							•	•
MACHE	•	•	•	•							•	•
NAPA	•	•	•	•							•	•
NAPA CABBAGE	•	•	•									•
ONIONS, SWEET (DRY)				•	•	•	•					
ONIONS, GREEN	•	•	•	•	•			•	•	•	•	•

• WINTER PRODUCE • SUMMER PRODUCE

VEGETABLE & TREE NUTS

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
PARSNIPS					•	•						
PEPPERS, GREEN BELL							•	•	•	•		
PEPPERS, RED BELL							•	•	•	•		
PEPPERS, GREEN CHILI						•	•	•	•	•		
PEPPERS, RED CHILI								•	•	•	•	
POTATOES, RED				•	•	•						
POTATOES, RUSSET				•	•	•						
PUMPKIN									•	•		
RADICCHIO		•	•	•								•
RADISHES		•	•	•	•					•	•	•
RAPINI		•	•	•								•
SALAD SAVOY		•	•	•							•	•
SPINACH		•	•	•							•	•
SQUASH (SUMMER) CROOKNECK						•	•	•	•	•		
SQUASH (SUMMER) SCALLOPED						•	•	•	•	•		
SQUASH (SUMMER) STRAIGHTNECK						•	•	•	•	•		
SQUASH (SUMMER) ZUCCHINI						•	•	•	•	•		
SQUASH (WINTER) ACORN									•	•	•	
SQUASH (WINTER) BANANA									•	•	•	
SQUASH (WINTER) BUTTERNUT									•	•	•	
SQUASH (WINTER) GOLD ACORN									•	•	•	
SQUASH (WINTER) HUBBARD									•	•	•	
SQUASH (WINTER) KOBACHA									•	•	•	
SQUASH (WINTER) SPAGHETTI									•	•	•	
SQUASH (WINTER) TURBAN									•	•	•	
SWISS CHARD		•	•	•	•						•	•
TOMATOES		•	•	•	•	•	•	•	•	•	•	•
TURNIP		•	•	•	•						•	•
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
PECANS	•										•	•
PISTACHIOS								•	•			



Exports

The diversity of Arizona agriculture produces many types of crops. Arizona grown crops and products are in demand around the world and throughout the United States.

Different crops and seeds are sold to 70 countries all around the world. The full list is too long to include, but some of the countries are China, Panama, France, Hong Kong, Canada and Mexico. The seeds grown here are in demand for agriculture in Colombia, Denmark, Jamaica, Egypt, Italy and many more. Arizona pecans are demanded in several countries because of their size and quality. In 2014, the United States Department of Agriculture's National Agriculture Statistics Service put the value of Arizona crop exports at almost \$470 million.

That same report reveals meat, dairy and other livestock products exported are worth about \$335 million.

That number does not include the eggs exported from the Grand Canyon State. Exporting of high-protein foods to countries where there is a lack of animal protein can contribute to better learning. A study published from UCLA in 2010 shows that test scores increased 45% with the addition of meat protein over five school terms.

Arizona's exports are only expected to grow in the future. In partnership with the Western United States Agricultural Trade Association (WUSATA), the Department is connecting producers with exporting companies and markets in other countries.

wusata.org





Department

Mission: To support and promote Arizona agriculture in a way that encourages farming, ranching and agribusiness, protects the well-being of people, plants, animals and the environment while safeguarding commerce, consumers and natural resources.

The Department preserves the health of people, animals, plants and natural resources. Every day department staff protect the food supply and ensure food safety. They reduce cost and increase efficiency for Arizona businesses by providing federal services.

Each Division within the Department delivers a variety of services for industry:

Animal Services – inspecting livestock, meat, egg, dairy and animal health

Plant Services – inspecting plants for export, preventing and containing pest threats

Environmental Services – licensing, consumer protection, worker safety and proper pesticide use

Pest Management – protecting consumers with licensing and compliance for residential and landscaping pesticide use

Weights and Measures Services – protecting consumers and industry with accurate measurements

Agricultural Consultation and Training – providing training on pesticide safety, food safety and agricultural air quality

Citrus, Fruit and Vegetable – providing produce inspections and food safety audits

State Laboratory – testing of milk, meat, feed, seed, fertilizer and pesticides



Partners



extension.arizona.edu/4h



arizonabeef.org



azcottongrowers.com



azcattlemensassoc.org



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Mark W. Killian, Director

Chris J. Minnick

Julie Murphree

Joan Murphy

Kurt D. Nolte

Edwin Remsberg

David W. Schafer

Bart Worthington

Department staff

Research

nass.usda.gov

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cals.arizona.edu

foodstudies.arizona.edu





Arizona Department of Agriculture
1688 W. Adams Street, Phoenix, AZ 85007

agriculture.az.gov